

latis, flabellatim 12–15-nervatis (nervis saepe furcatis), basi conspicue angustatis, apice rotundatis, margine integris et saepe parce glandulosis; staminibus 25–30 liberis, filamentis gracilibus 5–7 mm. longis, antheris ellipsoideis circiter 0.6 mm. longis; ovario ovoideo-ellipsoideo sub anthesi circiter 3.5 mm. longo et 2.5 mm. lato uniloculari, basi rotundato, placentis 3–5 parietalibus circiter 0.3 mm. latis, stylis 3–5 (raro 6) gracilibus 2–2.5 mm. longis, stigmatibus subtruncatis; capsulis stylis exceptis circiter 6 mm. longis polyspermis, apice stylis persistentibus coronatis, 3(–5)-valvis, seminibus complanatis ellipticis utrinque rotundatis 0.3–0.4 mm. longis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, alt. 2600–2650 m., *Brass* 10865 (TYPE), Oct. 1938 (slender erect shrub up to 2 m. high, plentiful on open landslips in forest), *Brass* 10979 (sparsely branched shrub 0.5–2 m. high, plentiful on open landslips in forest of lower slopes; flowers yellow, showy); Bele River, 18 km. northeast of Lake Habbema, alt. 2200 m., *Brass* 11361 (slender shrub about 1 m. high, plentiful on open grassy banks of river; flowers yellow); southern slopes of Grand Valley (Lake Habbema region), alt. 1800–2000 m., *Brass* (coll. *Teerink*) 9261 (flowers yellow).

*Hypericum habbemense* is very distinct among species of the region, characterized by its fairly tall shrubby habit, its comparatively large, rounded, and conspicuously pellucid-punctate leaf-blades, its very large flowers, numerous stamens, and the variability in the number of its styles and placentas. While the styles appear to be most often three in number, four and five are common, and six are occasionally seen, but in this latter case I have not observed more than five placentas.

I have not seen material of *H. Hellwigii* Lauterb., but according to the description, *H. habbemense* is probably allied, differing in the characters mentioned above. *Hypericum papuanum* Ridley is described as an herb with smaller leaves and flowers than the new species, but nevertheless it seems possible that Ridley's species was based on a depauperate specimen and is actually the same as *H. habbemense*. As the description of *H. papuanum* is entirely inadequate, I venture to describe our plant as new, but a comparison of the types should eventually be made.

#### CALOPHYLLUM L.

##### **Calophyllum** (§ *Apoterium*) **procerum** sp. nov.

Arbor grandis ubique praeter partes novellas et bracteas inflorescentiarum ferrugineo- vel cinereo-puberulas vel tomentellas glabra, ramulis novellis angulatis mox teretibus et cinereis; petiolis 7–13 mm. longis

canaliculatis superne complanatis; laminis coriaceis oblongo-ellipticis, 4–7 cm. longis, 2–4 cm. latis, basi acutis et in petiolum decurrentibus, apice rotundatis vel obtusis, margine paullo incrassatis, costa valida supra conspicue canaliculata subtus prominente, nervis lateralibus numerosissimis (24–32 per centimetrum) patentibus utrinque leviter prominulis; inflorescentiis juvenilibus (solis visis) compactis minutis in ramulis inter folia orientibus vel interdum axillaribus; bracteis basi inflorescentiae 4 submembranaceis vel papyraceis elliptico-oblongis, 2.5–3 mm. longis, circiter 1.5 mm. latis, apice rotundatis, extus minute tomentellis; floribus 4 vel 5 per inflorescentiam pseudofasciculatis (minute racemosis, rhachi brevissima) bracteolis minutis glabris subtentis; sepalis 4, 2 exterioribus papyraceis suborbicularibus concavis in specimine nostro immaturis circiter 1 mm. longis et latis, 2 interioribus similibus sed submembranaceis; petalis ut videtur nullis; staminibus numerosis (80–100), filamentis immaturis brevissimis, antheris oblongis obtusis; ovario minuto glabro.

BRITISH NEW GUINEA: Western Division, Lake Daviumbu, Middle Fly River, *Brass* 7589 (TYPE), Aug. 1936 (large tree with rounded leafy crown, forming, with a few other species, a scattered super-canopy layer in rain-forest; trunk cylindric, the bark gray, hard, deeply fissured, about 3 cm. thick on old trees; sap yellowish; the natives use this tree for their larger dugout canoes).

Although the inflorescences of the cited specimen are immature, it is apparent that even at maturity they would be unusually small, compact, and few-flowered. The position of the inflorescences, which are usually scattered along the branchlets rather than axillary, is also remarkable. *Calophyllum procerum* is a relative of *C. Versteegii* Lauterb., from which it differs in its longer petioles as well as in the size and position of the inflorescences as above mentioned.

**Calophyllum** (§ *Apoterium*) **Warburgii** Engl. in Engl. & Prantl, Nat.

Pfl. III. 6: 222. 1893; Lauterb. Nova Guin. Bot. 8: 843. 1912; Lauterb. Bot. Jahrb. 58: 13. 1922.

*Calophyllum lanceolatum* Warb. Bot. Jahrb. 13: 381. 1891; non Bl. (1825), non Teijsm. & Binn. (1855).

BRITISH NEW GUINEA: Western Division, Lake Daviumbu, Middle Fly River, *Brass* 7698 (common tree in rain-forest canopy, the bark hard, suberose, fissured, with yellow latex; flowers white), *Brass* 7724 (shapely tree 8–10 m. high, common in second growth rain-forest on old garden sites, the bark rusty brown, slightly flaky and with scattered very large lenticels; sap yellow, viscid; flowers white, fragrant), *Brass*

7745 (common tree of rain-forest canopy layer, the dark brown, thick, lenticellate, marked with shallow longitudinal fissures; sap cream-colored; flowers white, the filaments very slender), *Brass* 7748 (better flowering material of 7745).

The species has previously been reported only from the Key Islands and southern Netherlands New Guinea. Among the cited specimens, 7698 is an excellent match with *Warburg* 20048 (type coll.); the other specimens have a tendency toward slightly broader leaves, more ample inflorescences, and larger sepals, but these characters hardly seem of nomenclatural value.

Also of this relationship is *Brass* 7385 (BRITISH NEW GUINEA: Palmer River, 2 miles below junction with Black River, alt. 100 m.; canopy tree, common on the lower ridges). This specimen, in fruit, has leaves similar to those of the type collection of *C. Warburgii* but with the lateral nerves slightly more spaced. The fruiting inflorescences are racemose, up to 6.5 cm. long, and the apparently mature fruits are subglobose and about 14 mm. in diameter. Additional collections are desirable in order to ascertain the range of variation of *C. Warburgii*.

**Calophyllum** (§ *Apoterium*) **trachycaule** Lauterb. Bot. Jahrb. 58: 13. fig. 3. 1922.

BRITISH NEW GUINEA: Central Division, Kubuna, alt. 100 m., *Brass* 5654 (A, NY) (densely foliaged symmetrical tree 10 m. high, in rain-forest on low ridges, the bark pale brown, somewhat scaly; fruit dull blue).

The cited specimen agrees very well with the description and illustration of *C. trachycaule*, previously known from Northeastern New Guinea. Our specimen has the leaf-blades slightly larger (to 15 cm. long and 5 cm. broad) than those described and the fruits also somewhat larger (to 25 mm. long and 22 mm. broad), but these differences appear of little consequence.

**Calophyllum** (§ *Inophyllum?*) **solomonense** sp. nov.

Arbor grandis, ramulis juventute leviter angulatis (et gemmis) ferrugineo-puberulis vel -strigillosis mox subteretibus et fusco-cinereis; petiolis decidue puberulis rugosis crassis 15–23 mm. longis; laminis coriaceis subnitidis elliptico-oblongis, 11–23 cm. longis, 5.5–10 cm. latis, basi obtusis vel acutis et in petiolum decurrentibus, apice ut videtur obtusis vel rotundatis, margine incrassatis et leviter recurvatis, supra glabris, subtus praeter costam decidue ferrugineo-tomentellam glabris, costa valida supra valde elevata et inferne canaliculata subtus prominente et carinata, nervis lateralibus numerosis (18–26 per centimetrum) patenti-

bus leviter curvatis utrinque paullo prominulis; inflorescentiis sub fructu axillaribus racemosis (vel ut videtur interdum pseudofasciculatis) fructibus inclusis ad 4 cm. longis, pedunculo brevi et rhachi ad 12 mm. longis cum pedicellis 14–17 mm. longis rugosis et glabris, fructibus 1–3 per inflorescentiam ovoideo-subglobosis maturitate ad 22 mm. diametro, apice obtusis et stylo saepe coronatis, pericarpio 1.5–3 mm. crasso extra levi vel demum rugoso.

SOLOMON ISLANDS: *G u a d a l c a n a l*: Ma-massa, Konga, alt. 500 m., *Kajewski 2469* (TYPE), Feb. 8, 1931 (large tree up to 25 m. high, common in rain-forest, sometimes found on creek-banks and overhanging streams, the bark furrowed; native name: *coi-low*; an excellent timber-tree). *Y s a b e l*: Tataba, alt. 50 m., *Brass 3447* (common tree on rain-forest ridges, attaining large size, the bark rough, brown, scaly, the wood brown, tough; sap yellow, very viscid; branchlets, petioles, midribs, and leaf-margins brown; fruits mottled-green).

*Calophyllum solomonense* cannot definitely be referred to a section in the absence of flowers, but it bears a close resemblance to *C. inophyllum* L. in foliage, differing obviously in its greatly contracted inflorescences. In the Brass specimen the fruits appear to be solitary in the leaf-axils; in the type this is rarely the case, the fruits being arranged on very short racemes. The fruits of the Brass specimen are apparently essentially mature, in which condition they are much smaller than those of *C. inophyllum*. *Calophyllum vitiense* Turrill and *C. samoense* Christophersen are also of the relationship of *C. solomonense*, but both have slightly narrower leaf-blades, more ample inflorescences, and probably larger fruits. To the best of my knowledge, only the ubiquitous sea-coast *C. inophyllum* has thus far been reported in the genus from the Solomons.

***Calophyllum* (§ *Inophyllum*) *vitiense* Turrill, Jour. Linn. Soc. Bot. 43: 17. 1915.**

SOLOMON ISLANDS: *B o u g a i n v i l l e*: Koniguru, Buin, alt. 850 m., *Kajewski 2020* (tree to 35 m. high, common in rain-forest; fruit yellow when ripe, to 38 mm. long and 25 mm. broad; native name: *pugiario*; a good timber-tree). *G u a d a l c a n a l*: Ma-massa, Konga, alt. 400 m., *Kajewski 2463* (tree to 40 m. high, common in rain-forest, with medium-sized flanges and a rough furrowed bark; fruit black when ripe, to 30 mm. long and 22 mm. broad; tree furnishing an exceptionally fine cabinet wood); Uulolo, Tutuve Mt., alt. 1200 m., *Kajewski 2657* (tree to 30 m. high, common in rain-forest, the bark rough, furrowed; fruit purple when ripe, to 26 mm. long and 22 mm. broad; tree furnishing a fine cabinet wood).

The cited specimens are all in fruit, in which condition they agree in every respect with *Seemann 47* (cotype coll.) and several other Fijian specimens of *C. vitiense*. If my determination is correct, the species is to be anticipated in the New Hebrides. From Kajewski's notes, it seems that the tree is fairly common at middle elevation in the Solomons and is conspicuous by its great size.

**Calophyllum** (§ *Inophyllum*) **papuanum** Lauterb. Bot. Jahrb. 58: 9. 1922.

NETHERLANDS NEW GUINEA: 4–6 km. southwest of Bernhard Camp, Idenburg River, alt. 850–1200 m., *Brass & Versteegh 13124* (occasional tree of primary forest in flood-plain, 23 m. high, the trunk 30 cm. diam., the crown small; bark 4 mm. thick, brownish black, with some dark yellow sap; sap-wood brown; heart-wood reddish brown; fruits green), *Brass & Versteegh 12518* (frequent tree of primary forest on the slope of a ridge, 34 m. high, the trunk 45 cm. diam., the crown fairly small; bark 10 mm. thick, dark brown, with yellow resin; wood red-brown; fruits green), *Brass 12786* (canopy tree in rain-forest, 25 m. high, the trunk 35 cm. diam.; lower surfaces of leaves brown-pubescent). NORTH-EASTERN NEW GUINEA: Morobe District, Sattelberg, alt. 750 m. *Clemens 2278* (tree about 15 m. tall, on forest hill; fruits green); Yunzaing, alt. 1400 m., *Clemens 3656* (tree 30 m. high, in high forest, the trunk about 1 m. diam.; fruit green); Ogeramnang, alt. 1850 m., *Clemens 5389*.

Although the cited specimens bear fruit and leaves only, they can be referred to *C. papuanum* with some confidence; they agree with the description in all respects, including the persistently tomentellous or conspicuously puberulent aspect of the distal branchlets and the lower surface of the costa. Our specimens occasionally have the leaf-blades up to 10 cm. long and 5 cm. broad, slightly larger than those described by Lauterbach. The leaf-blades are often deciduously farinose-puberulent beneath. A description of the fruits, based on the cited material, follows:

Fruiting inflorescences compact, hardly exceeding 4 cm. in length (including fruits), the peduncles and pedicels stout, farinose-puberulent, the pedicels (above ultimate articulations) 5–8 mm. long; fruits usually reduced to 1 per inflorescence, glabrous, subglobose, at maturity about 2.5 cm. in diameter, the pericarp 4–8 mm. thick, smooth, the mesocarp spongy; seed ovoid.

**Calophyllum** (§ *Inophyllum*) **pauciflorum** sp. nov.

Arbor grandis ubique praeter partes novellas evanescenter ferrugineo-puberulas glabra, ramulis gracilibus novellis quadrangularibus demum teretibus et cinereis; petiolis rugulosis canaliculatis 3–10 mm. longis;

laminis coriaceis rhomboideo-ellipticis vel -obovatis, 3–7.5 cm. longis, 1.5–3.5 cm. latis, basi acutis, apice obtusis vel rotundatis, margine incrassatis et saepe recurvatis, subtus minute sed copiose glanduloso-punctulatis, costa supra elevata et basim versus leviter canaliculata subtus prominente carinata, nervis lateralibus numerosissimis (18–25 per centimetrum) obliquis supra subimmersis subtus prominulis; inflorescentiis apices ramulorum versus axillaribus racemosis vel reductis et simplicioribus 1–3-floris, sub anthesi 1–1.5 cm. longis, pedunculo brevi et pedicellis (3–5 mm. longis) incrassatis, bracteis mox caducis; floribus sub anthesi 7–10 mm. diametro; sepalis 4, 2 exterioribus papyraceis late suborbicularibus, circiter 4 mm. longis et 4.5–5 mm. latis, glabris vel interdum extus inconspicue puberulis, 2 interioribus ut petalis similibus; petalis 4 submembranaceis obovato-suborbicularibus, 6–7.5 mm. longis et latis, arcte nervatis, margine scariosis et puberulenti-ciliolatis; staminibus numerosissimis (circiter 100), filamentis gracillimis filiformibus ad 6 mm. longis, antheris oblongis circiter 2 mm. longis apice mucronulatis; ovario glabro ovoideo sub anthesi circiter 2 mm. longo, stylo crasso ovarium aequante, stigmatate peltato circiter 2 mm. diametro margine crenulato obscure trifido; inflorescentiis sub fructu brevibus (fructibus inclusis ad 3 cm. longis), pedunculo pedicellisque paullo incrassatis, fructibus plerumque solitariis subglobosis maturitate (?) ad 17 mm. diametro, apice stylo subpersistente coronatis, pericarpio 2–3 mm. crasso extus levi.

NORTHEASTERN NEW GUINEA: Morobe District, Yunzaing, alt. 1250–1550 m., *Clemens* 2378 (TYPE), Apr. 21, 1936 (large tree, in Mt. Aloki forest; flowers white; anthers golden), *Clemens* 3849; Ogeramnang, alt. 1700 m., *Clemens* 4955. The type bears flowers, 3849 fruits, and 4955 flower-buds.

*Calophyllum pauciflorum* appears to be a close relative of *C. papuanum* Lauterb., from which it differs in its essentially glabrous habit, its somewhat rhomboid (rather than lanceolate-elliptic) leaf-blades which are smaller on the average, its more compact inflorescences, its much smaller flowers, its glabrous or puberulent (rather than furfuraceous) outer sepals, its much longer anthers with conspicuously elongate filaments, and its glabrous (rather than tomentose) ovary.

***Calophyllum* (§ *Inophyllum*) *congestiflorum* sp. nov.**

Arbor 18–25 m. alta ubique sub anthesi glabra, ramulis juventute quadrangularibus mox teretibus et cinereis; petiolis rugulosis canaliculatis 2–5 mm. longis; laminis coriaceis oblongo- vel obovato-ellipticis, 2.5–5 cm. longis, 1.3–3 cm. latis, basi obtusis, apice rotundatis vel in-

terdum leviter emarginatis, margine paullo incrassatis, subtus inconspicue sed copiose glanduloso-punctulatis, costa supra canaliculata interdum paullo elevata subtus prominente carinata, nervis lateràlibus numerosissimis (20–30 per centimetrum) patentibus supra subimmersis subtus leviter prominulis vel subplanis; inflorescentiis apices ramulorum versus axillaribus congestis breviter racemosis 1–3-floris, sub anthesi 7–10 mm. longis, pedunculo pedicellisque brevissimis paullo incrassatis, bracteis mox caducis; floribus sub anthesi 6–9 mm. diametro; sepalis 4, 2 exterioribus papyraceis late suborbicularibus, circiter 3 mm. longis, 3.5–4 mm. latis, glabris, margine puberulenti-ciliolatis, 2 interioribus ut petalis similibus; petalis 4 mox caducis submembranaceis late obovatis, 4.5–5.5 mm. longis et latis, arcte nervatis, margine puberulenti-ciliolatis; staminibus numerosis (30–50), filamentis filiformibus 1.5–3 mm. longis, antheris oblongis 0.7–1 mm. longis apice obtusis; ovario glabro subgloboso sub anthesi circiter 2 mm. diametro, stylo brevi crasso, stigmate juvenili non viso sub anthesi ut videtur subpeltato; inflorescentiis sub fructu brevibus, fructibus plerumque solitariis subglobosis immaturis ad 12 mm. diametro, apice stylo coronatis, pericarpio tenui levi vel siccitate ruguloso.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, alt. 1800 m., *Brass & Versteegh 11902* (TYPE), Jan. 10, 1939 (tree 18 m. high, frequent in mossy forest on crests of ridges, the trunk 40 cm. diam., the crown small; bark 8 mm. thick, dark brown, fairly smooth, with light yellow resin; sap-wood rose; heart-wood red; flowers white), *Brass 12122* (tree up to about 25 m. high, a mossy forest co-dominant, the trunk about 80 cm. diam.; sap somewhat milky; wood pale and soft, an excellent fuel when green; flowers white); 8 km. southwest of Bernhard Camp, alt. 1600 m., *Brass 12721* (tree 20 m. high, in mossy forest, the trunk 25 cm. diam.; fruit immature). BRITISH NEW GUINEA: Western Division, Palmer River, 2 miles below junction with Black River, ? *Brass 7099* (canopy tree with spurred trunk, plentiful in ridge-forests, the bark thick, flaky, yellowish, suberose; crown compact, the leaves rigid; immature fruit about 1 cm. diam.).

*Calophyllum congestiflorum* appears to represent a continuation of the trend toward reduced inflorescences and smaller flowers, seen in the preceding new species (*C. pauciflorum*), both of these species being related to *C. papuanum* Lauterb. *Calophyllum congestiflorum* differs from *C. pauciflorum* not only in its more compact inflorescences and smaller flowers, but also in its much shorter anthers and filaments. This latter character does not necessarily follow the size of the flowers, since *C. papuanum*, with large flowers, has small anthers. The new

species differs from *C. papuanum* in its glabrous habit and small leaves, as well as in obvious floral characters.

The type and 12122 bear flowers, 12721 immature fruits. The specimen from the Palmer River is questionably referred to this species. It bears immature fruits and has foliage very similar to that of the other cited specimens, but with a trace of furfuraceous puberulence on the lower surface of the costa and with even more obscure glandular punctation. It may represent an undescribed species; should it prove to belong to *C. congestiflorum*, the species will have an unusually broad altitudinal range.

Both *C. congestiflorum* and *C. pauciflorum* bear a marked resemblance to the Fijian *C. cerasiferum* Vesque (known only in fruiting condition), a species with slightly larger (on the average) leaf-blades with closer lateral nerves and less obvious glandular punctations on the lower surfaces.

**Calophyllum** (§ *Inophyllum*) **costatum** F. M. Bailey, Queensl. Fl. 104. 1899; Compr. Cat. Queensl. Pl. fig. 40. 1913.

BRITISH NEW GUINEA: Western Division, Gaima, Lower Fly River (east bank), Brass 8337 (rain-forest canopy tree attaining 25–30 m. in height, the bark thick, scaly, secreting a green glutinous sap; outer wood ripple-marked; flowers white).

Originally based on a fruiting specimen collected in Queensland by Bailey, *C. costatum* has not previously been reported from New Guinea. Having compared the Brass specimen with the cited plate and a sterile specimen collected in North Queensland by C. T. White, I feel reasonably sure of the determination. However, it is conceivable that collection of flowering specimens in Queensland will establish the specific distinctness of our plant, in which case it probably represents a new species; it is none of those treated by Lauterbach (loc. cit. 8–14), being only distantly related to *C. papuanum* Lauterb. The inflorescences of the Brass specimen are here described:

Inflorescences axillary toward apices of branchlets, racemose, usually 1–3-flowered, 1–2 cm. long at anthesis, the peduncle short, deciduously puberulent, the pedicels slender, 3–5 mm. long, the bracts small, caducous; flowers about 10 mm. in diameter at anthesis; sepals 4, the 2 outer ones papyraceous, suborbicular, 3–4 mm. in diameter, glabrous, with faintly puberulent-ciliolate margins, the 2 inner ones similar to petals; petals 4, membranous, obovate-elliptic, at anthesis 5–6 mm. long and 3–4.5 mm. broad, glabrous, obscurely ciliolate at margins, finely nerved, often reflexed at margins; stamens 50–60, the filaments filiform, 3–4 mm. long at anthesis, the anthers oblong, about 2.5 mm.



long, mucronulate at apex; ovary glabrous, ellipsoid, 1.5–2 mm. long at anthesis, the style equalling the ovary, the stigma peltate, 1.5–2 mm. in diameter, irregularly bifid, crenulate at margins.

**Calophyllum** (§ *Inophyllum*?) **Brassii** sp. nov.

Arbor ad 20 m. alta sub fructu ubique praeter ramulos inflorescentiarum decidue ferrugineo- vel cinereo-puberulos glabra, ramulis robustis (apicem versus 4–6 mm. diametro) leviter angulatis et saepe striatis demum subteretibus et cinereis, interdum conspicue lenticellatis; petiolis rugosis crassis (3–5 mm. diametro) 2–4 mm. longis; laminis crasse coriaceis subnitidis oblongis, 12–17 cm. longis, 5–6 cm. latis, basi rotundatis, apice ut videtur rotundatis vel obtusis, margine incrassatis et conspicue sed anguste recurvatis, costa valida supra leviter elevata (inferne canaliculata superne carinata) subtus valde prominente, nervis lateralibus numerosis (16–28 per centimetrum) patentibus subrectis utrinque inconspicue prominulis; inflorescentiis sub fructu apices ramulorum versus axillaribus paniculatis fructibus inclusis ad 6.5 cm. longis et 8 cm. latis, pedunculo brevissimo, ramulis paucis et rhachi rugosis angulatis robustis (2–3 mm. diametro), pedicellis 8–24 mm. longis crassis superne leviter incrassatis; fructibus pluribus (5–8 vel ultra) per inflorescentiam ovoideo-subglobosis, ut videtur maturitate et siccitate ad 13 mm. diametro, apice obtusis et stylo brevi saepe coronatis, pericarpio siccitate circiter 2 mm. crasso extra demum rugoso, epicarpio tenui, mesocarpio suberoso.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass & Versteegh 13122* (TYPE), March 7, 1939 (tree 20 m. high, frequent in primary rain-forest on the flat plain, the trunk 55 cm. in diameter, the crown not wide-spreading; bark 14 mm. thick, brown, scaly, with pale yellow sap, the sap-wood brown, the heart-wood dark brown; fruits green).

*Calophyllum Brassii* is a species characterized by its unusually thick oblong leaf-blades with very short petioles. Known only from the cited fruiting specimen, the species cannot be accurately placed within the genus, but its comparatively short paniculate inflorescences suggest *C. Kiong* Lauterb. & K. Schum., perhaps its closest ally. *Calophyllum Brassii* differs from *C. Kiong* in having short petioles, leaf-blades narrower and rounded rather than cuneate or acute at base, and lateral nerves less obvious and less crowded.

**Calophyllum savannarum** sp. nov.

Arbor 10–12 m. alta sub fructu ubique glabra, ramulis gracilibus juventute leviter complanatis vel angulatis mox subteretibus et fusco-

cinereis ad nodos paullo incrassatis; petiolis leviter canaliculatis vel complanatis 9–17 mm. longis; laminis coriaceis siccitate fusco-olivaceis anguste elliptico-oblongis, 8–13 cm. longis, 3.5–5.5 cm. latis, basi acutis et in petiolum decurrentibus, apice gradatim acuminatis (acumine ad 1 cm. longo obtuso), margine leviter incrassatis et paullo recurvatis, costa supra elevata et basim versus canaliculata subtus prominente et saepe carinata, nervis lateralibus valde adscendentibus subrectis 10–16 per centimetrum utrinque valde prominulis; inflorescentiis sub fructu axillaribus vel subterminalibus racemosis fructibus inclusis 3–9 cm. longis, rhachi gracili (1–2 mm. diametro), pedicellis 6–15 mm. longis superne incrassatis, fructibus ut videtur 3–7 per inflorescentiam vel interdum paucioribus ellipsoideis maturitate ad 22 mm. longis et 15 mm. latis, apice rotundatis et stylo saepe apiculatis, basi rotundatis, epicarpio tenui levi glaucescente, mesocarpio suberoso.

NETHERLANDS NEW GUINEA: Vicinity of Hollandia, alt. 20–100 m., *Brass* 8888 (TYPE), June 29, 1938 (tree 10–12 m. high, one of the principal species of forest clumps on secondary savannas; fruits blue).

*Calophyllum savannarum*, although represented by a fruiting specimen only, is quite distinct among species of *Calophyllum* in the region in its conspicuous lateral nerves, which ascend at an angle approaching 45°. Among Papuan species, it seems most suggestive of *C. Sil* Lauterb., differing in its venation, its leaf-shape, its longer fruiting pedicels, and its somewhat larger fruits. The true relationship of the new species is hardly to be ascertained until flowers are available.

#### ***Calophyllum Kajewskii* sp. nov.**

Arbor grandis sub fructu ubique glabra, ramulis crassis (apices versus 4–6 mm. diametro) purpurascensibus rugosis demum fuscis et lenticellatis; petiolis crassis (circiter 3 mm. diametro) rugosis 15–20 mm. longis leviter canaliculatis; laminis coriaceis subnitidis oblongo-vel obovato-ellipticis, 14–17 cm. longis, 6–9 cm. latis, basi acutis et in petiolum decurrentibus, apice rotundatis, margine conspicue incrassatis et saepe leviter recurvatis, costa valida supra valde elevata (inferne canaliculata superne carinata) subtus prominente et carinata, nervis lateralibus numerosis (14–20 per centimetrum) erecto-patentibus subrectis utrinque prominulis; inflorescentiis non visis; fructibus magnis subglobosis 5–6 cm. diametro, longitudinaliter multicostatis (costis non conspicuis sed facile distinguitur), basi et apice rotundatis, pericarpio lignoso 10–15 mm. crasso.

SOLOMON ISLANDS: Bougainville: Koniguru, Buin, alt. 800 m., *Kajewski* 2024 (TYPE), Aug. 6, 1930 (large rain-forest giant,

common, the bark slightly furrowed; fruit green, more or less globular, with slightly raised ridges; native name: *sikoraku*); Siwai, *Waterhouse 201* (NY) (large tree with orange-like fruit; native names: *huwau*, *manuba*, *qalukoko*, *bunkebuni*).

Although it is represented only by foliage and a single detached fruit accompanying the type, in which condition it cannot be referred to a section, the cited specimens are so distinct that I venture to describe them as new. No *Calophyllum* thus far known from the region, as far as I can ascertain, has such an extremely large and woody fruit. The foliage of *C. Kajewskii* closely resembles that of the lowland *C. inophyllum* L., which, of course, has a very different fruit. The only available sheet of *Waterhouse 201* is sterile, but its foliage and the note implying the size of the fruit strongly suggest *C. Kajewskii*.

#### GARCINIA L.

#### **Garcinia** (§ *Xanthochymus*) **Warburgiana** nom. nov.

*Xanthochymus novo-guineensis* Warb. Bot. Jahrb. 13: 381. 1891.

*Garcinia novo-guineensis* Warb. ex Lauterb. Nova Guinea Bot. 8: 309. 1910; Bot. Jahrb. 58: 19. 1922; non Vesque (1893).

The necessity for applying a new name to this species arises from the fact that Warburg's parenthetical mention of *Garcinia* does not alter his acceptance of *Xanthochymus* as the genus of his new species. *Garcinia novo-guineensis* Vesque was referred by Lauterbach to *G. Edelfeldtii* (Lauterb. Bot. Jahrb. 58: 21. 1922), which is therefore an unnecessary binomial. Although known from several specimens from other sections of New Guinea, *G. Warburgiana* has not previously been reported from British New Guinea, where it is represented by the following collections:

BRITISH NEW GUINEA: Koitaki, alt. 450 m., *Carr 12727* (NY) (tree 25 m. high; fruit green), *Carr 12735* (NY) (tree 12 m. high; buds green); Western Division, Mabaduan, *Brass 6489* (common in monsoon-forest substage; excurrent richly branched tree attaining 20 m., exuding a cream colored latex when cut; leaf-blades stiff, the largest ones about 30 cm. long, at ends of branchlets, the nerves deeply impressed above, prominent beneath; fruit pale yellow, about 3.5 cm. diam.); Lower Fly River, east bank opposite Sturt Island, *Brass 7976* (sub-canopy tree to 25 m. high, occasional on ridges in rain-forest, the bark hard, slightly scaly, the latex white; flowers greenish white).

Our specimens have the leaf-blades considerably larger than those previously described; according to Brass' notes these attain a size of

30 cm. long and presumably about 17 cm. broad. The staminate flowers of *Brass* 7976 are also unusually large, with petals up to 9 mm. long and broad and phalanges up to 7 mm. long.

***Garcinia* (§ *Cambogia*) *angustifolia* sp. nov.**

Arbor gracilis glabra ad 5 m. alta, ramulis gracilibus (apicem versus 1–2 mm. crassis) cinereis juventute inconspicue quadrangulatis demum teretibus; petiolis gracilibus (0.5–1 mm. diametro) canaliculatis 6–10 mm. longis, basi foveola inconspicua praeditis; laminis membranaceis vel tenuiter papyraceis siccitate fusco-viridibus lanceolato-oblongis, 8–14 cm. longis, 2–3.5 cm. latis, basi subattenuatis et in petiolum decurrentibus, apice cuspidatis vel abrupte acuminatis (acumine 3–8 mm. longo obtuso), margine integris, costa supra paullo canaliculata et saepe inconspicue elevata subtus prominente, nervis lateralibus utrinsecus 15–20 (cum nervis debilioribus interdum interspersis) erecto-patentibus utrinque prominulis nervo marginali conjunctis, venulis inconspicuis; inflorescentiis in axillis foliorum saepe delapsorum pulvinatis, floribus ♂ paucis (juvenilibus 3–5 sed sub anthesi plerumque 1) sessilibus sub anthesi circiter 5 mm. longis et 4 mm. diametro, bracteis inconspicuis deltoideis suffultis; sepalis 4 subaequalibus anguste imbricatis papyraceis ovato-deltoideis, 1.5–2 mm. longis et latis, apice rotundatis, margine scariosis et integris vel minute erosulis; petalis 4 valvatis sub anthesi suberectis tenuiter carnosis obovato-lanceolatis, 3.5–4 mm. longis, 1–1.3 mm. latis, apice rotundatis, margine subintegris; staminibus 5 vel 6 liberis toro carnosio subtereti erecto 1–1.5 mm. longo insertis, antheris 1- vel 2-seriatis sessilibus oblongis, circiter 1 mm. longis et 0.5 mm. latis, apice truncatis vel minutissime papillosis, loculis 2 rimis elongatis lateralibus dehiscentibus; ovario nullo.

NETHERLANDS NEW GUINEA: Vicinity of Hollandia, alt. 100 m., *Brass* 8990 (TYPE), July 8, 1938 (tree 5 m. high, occasional in rain-forest undergrowth).

*Garcinia angustifolia* is characterized by its thin and narrow leaf-blades and the reduced number of its stamens. It is a close relative of *G. pachypetala* Lauterb., a montane species; although mature flowers of *G. pachypetala* have not been described, they have 8–10 stamens and are apparently larger than those of the new species.

***Garcinia* (§ *Cambogia*) *pachyantha* sp. nov.**

Arbor parva glabra, ramulis crassis (apicem versus 2–4 mm. crassis) juventute paullo complanatis mox teretibus et cinereis; petiolis rugulosis leviter canaliculatis 10–22 mm. longis, basi foveola inconspicua praeditis; laminis papyraceis vel chartaceis elliptico-oblongis, 8–17 cm. longis, 3–6.5

cm. latis, basi subattenuatis et in petiolum decurrentibus, apice abrupte acuminatis (acumine 5–10 mm. longo obtuso), margine integris et anguste recurvatis, costa supra leviter canaliculata subtus prominente, nervis lateralibus utrinsecus 15–20 erecto-patentibus interdum furcatis cum aliis brevioribus interspersis utrinque prominulis nervo marginali conjunctis, venulis subimmersis; floribus ♂ paucis (plerumque sub anthesi singulis) ex pulvinis conspicuis axillaribus sessilibus, sub anthesi 14–16 mm. diametro, bracteis inconspicuis mox deciduis suffultis; sepalis 4 papyraceis vel submembranaceis anguste imbricatis late semiorbicularibus, 2.5–3.5 mm. longis, 4–5.5 mm. latis, apice rotundatis, margine integris et scariosis; petalis 4 anguste imbricatis carnosis oblongis, 7–8 mm. longis, 4–5 mm. latis, apice rotundatis, margine anguste scariosis et integris; staminibus 21–25 liberis toro applanato vel paullo convexo insertis, antheris sessilibus oblongis, 1.5–1.8 mm. longis, circiter 1 mm. latis, apice truncatis, connectivo crasso, loculis 2 rimis elongatis lateralibus dehiscentibus; ovario nullo; fructibus axillaribus sessilibus ut videtur subglobosis et ad 2.5 cm. diametro, basi sepalis persistentibus suffultis, apice stigmate sessili circiter 5 mm. diametro coronatis, seminibus plus minusve 10, pericarpio carnoso.

NORTHEASTERN NEW GUINEA: Morobe District, Sattelberg, alt. 1030 m., *Clemens 3080* (TYPE), May 12, 1936 (on forest hill above mission; flowers white); Yunzaing, alt. 1400 m., *Clemens 3597A* (tree, the trunk 13–15 cm. diam., along forest trail), *Clemens 4183* (small tree, the trunk about 13 cm. diam.; fruit green). Nos. 3080 and 3597A bear ♂ flowers; no. 4183 is accompanied by a few badly dried fruits.

*Garcinia pachyantha* is related to *G. fruticosa* Lauterb., differing in its proportionately broader leaf-blades with more numerous lateral nerves, its longer petioles, its larger flowers, especially as regards the carnose petals, and its fewer stamens (21–25 rather than about 30).

***Garcinia* (§ *Cambogia*) *riparia* sp. nov.**

Arbor glabra 5–15 m. alta, ramulis ut videtur elongatis subteretibus (apicem versus complanatis) juventute fuscis demum cinereis; petiolis circiter 2 mm. crassis leviter canaliculatis 15–22 mm. longis, basi foveola deltoidea inconspicua ornatis; laminis tenuiter papyraceis elliptico-oblongis, 12–20 cm. longis, 5.5–9 cm. latis, basi acutis vel gradatim attenuatis et in petiolum decurrentibus, apice cuspidatis vel acuminatis (acumine ad 15 mm. longo obtuso), margine integris et anguste recurvatis, costa supra paullo elevata et obscure striata vel canaliculata subtus prominente, nervis lateralibus utrinsecus 8–12 adscendentibus

vel erecto-patentibus utrinque conspicue elevatis marginem versus valde adscendentibus, rete venularum inconspicuo vel utrinque paullo prominulo; floribus ♂ paucis (juvenilibus ut videtur pluribus sed sub anthesi plerumque 1 vel 2) ex pulvinis conspicuis (ad 7 mm. diametro) in axillis foliorum delapsorum sessilibus, sub anthesi ad 15 mm. diametro, bracteis minutis suffultis; sepalis 4 papyraceis late ovato-semiorbicularibus, circiter 4 mm. longis, 4–5 mm. latis, apice rotundatis, margine scariosis et integris; petalis 4 in alabastro imbricatis sub anthesi crasse carnosus anguste obovato-oblongis, 7–8 mm. longis, 3–4 mm. latis, apice rotundatis, margine integris vel minute erosulis; androecio conspicuo, toro cylindrico crasse carnosus 1.5–2 mm. longo 1–1.3 mm. diametro apice incrassato et stamina 40–50 gerente, antheris subsessilibus confertis oblongis, 0.5–0.6 mm. longis, circiter 0.3 mm. latis, apice truncatis vel leviter emarginatis, loculis 2 rimis verticalibus lateralibus dehiscentibus; ovario nullo; fructibus axillaribus sessilibus subgloboso-obovoideis, maturitate ad 7 cm. longis et 5 cm. latis, basi sepalis persistentibus suffultis, apice rotundatis et stigmate sessili radiatim rugoso circiter 4 mm. diametro coronatis, extra conspicue 7–10-costatis, pericarpio siccitate coriaceo, seminibus 7–10 oblongis in pulpo nidulantibus.

BRITISH NEW GUINEA: Western Division, Sturt Island, Lower Fly River, *Brass 8154* (TYPE), Oct. 1936 (loosely branched undergrowth tree 5–6 m. high, plentiful in flood-plain rain-forest; flowers pale pink, with a fungus on petals); Lower Fly River, east bank opposite Sturt Island, *Brass 8025* (weak spreading tree 5–6 m. high, common in undergrowth in rain-forest on flood-plain; leaf-margins recurved; fruit green, broadly pyriform, almost sessile below the leaves); Lake Daviumbu, Middle Fly River, *Brass 7588* (tree 15 m. high, in rain-forest substage; fruit yellow-green, solitary, sessile on old wood). The type bears ♂ flowers, the other two specimens being in fruit.

*Garcinia riparia* is a very distinct species of § *Cambogia*, characterized by its thin leaf-blades with comparatively few and ascending lateral nerves, few-flowered inflorescences with large sessile flowers, and a conspicuous columnar androecium with numerous stamens. It appears to be closely related to *G. Ledermannii* Lauterb., from which it differs in its fewer lateral nerves, larger leaf-blades, smaller flowers, especially as regards the petals and androecium, and its larger and conspicuously costate fruits with more numerous seeds.

***Garcinia* (§ *Cambogia*) *solomonensis* sp. nov.**

Arbor glabra ad 25 m. alta, ramulis apicem versus quadrangulatis demum teretibus et fusco-cinereis; petiolis rugulosis canaliculatis 8–12

(-20) mm. longis, basi foveola oblonga inconspicua ornatis; laminis papyraceis siccitate fusco-olivaceis elliptico-oblongis, 8-15 mm. longis, 3.5-6(-8) cm. latis, basi acutis vel attenuatis et in petiolum decurrentibus, apice cuspidatis vel acuminatis (acumine 3-10 mm. longo obtuso), margine integris et anguste revolutis, costa supra subplana vel leviter canaliculata subtus prominente, nervis lateralibus utrinsecus 8-12(-14) erecto-patentibus utrinque valde prominulis marginem versus arcuatis et nervo marginali conjunctis, rete venularum inconspicuo plerumque immerso; floribus ♂ paucis (sub anthesi plerumque solitariis) ex pulvinis interdum conspicuis in axillis foliorum mox delapsorum sessilibus, sub anthesi 5-7 mm. diametro, bracteis 4 imbricatis papyraceis reniformi-suborbicularibus ad 1.5 mm. longis suffultis; sepalis 4 tenuiter carnosus oblongo-suborbicularibus, 2-3.5 mm. longis et latis, apice rotundatis, margine integris; petalis 4 (in specimine nostro ut videtur immaturis) carnosus oblongis, 2-2.5 mm. longis, 1-1.5 mm. latis, apice rotundatis, margine integris; staminibus 40-45 congestis toro leviter convexo insertis, antheris subsessilibus liberis multiseriatis oblongis, circiter 0.35 mm. longis et 0.25 mm. latis, apice truncatis, basim versus paullo angustatis, connectivo leviter incrassato, loculis 2 rimis verticalibus lateralibus dehiscentibus; ovario nullo; fructibus axillaribus sessilibus subglobosis vel ellipsoideis, maturitate ut videtur ad 4 cm. diametro, basi sepalis persistentibus suffultis, apice rotundatis et stigmate sessili inconspicuo coronatis, extra inconspicue 7-10-costatis, pericarpio carnosus, seminibus 7-10 in pulpo nidulantibus.

SOLOMON ISLANDS: Bougainville: Siwai, *Waterhouse 186* (A, NY, TYPE, Y) Jan. 1933 (small tree about 5 m. high, the trunk about 35 cm. diam.; native name: *pinuhunuhunu*); Kugumaru, Buin, alt. 150 m., *Kajewski 1816* (medium-sized tree up to 20 m. high, common in rain-forest; bark with a yellow sap; fruit green, with yellow sap; native name: *na-boita*); Lake Luralu, Koniguru, Buin, alt. 1500 m. ?*Kajewski 2063* (small tree, common among stunted vegetation in rain-forest; leaves purple-veined; fruit plum colored; native name: *sipego*); Kupei Gold Field, alt. 950 m., ?*Kajewski 1673* (tree up to 25 m. high, common in rain-forest; fruit yellow-red when ripe). Guadalcanal: Ma-massa, Konga, alt. 500 m., *Kajewski 2484* (tree to 18 m. high, common in rain-forest; fruit apple-shaped, yellow-green when ripe, with pleasant fragrance and not abundant pulp).

Of the cited specimens, only the type collection is in flower; the others bear fruits, but only *Kajewski 2484* appears to have a ripe fruit. The two questioned *Kajewski* collections are dubiously included in this species; they occur at higher elevations than the others and have thicker

leaf-blades with more robust petioles; their fruits, although young, appear to be proportionately longer than those of *Kajewski 1816* and *2484*, of which the former especially is a good foliage match for the type.

*Garcinia solomonensis* is characterized by its sessile and usually solitary flowers with numerous stamens. Its relationship is probably with *G. Ledermannii* Lauterb. and *G. Assugu* Lauterb., but it differs from the first in such obvious characters as its fewer secondary nerves, small flowers, and inconspicuous androecium-torus, and from the second in its few flowers, small anthers, few secondary nerves, etc.

***Garcinia* (§ *Cambogia*) *macrantha* sp. nov.**

Arbor parva glabra, ramulis crassis (apicem versus 5–7 mm. diametro) rugosis juventute quadrangulatis demum subteretibus; petiolis crassis (3–5 mm. diametro) rugosis leviter canaliculatis 15–30 mm. longis, basi foveola conspicua oblonga ad 10 mm. longa ornatis; laminis tenuiter coriaceis vel chartaceis amplis siccitate fusco-olivaceis elliptico-oblongis, 18–32 cm. longis, 8–14 cm. latis, basi obtusis vel rotundatis et in petiolum paullo decurrentibus, apice obtusis vel obtuse cuspidatis, margine integris vel undulatis et leviter recurvatis, costa supra paullo elevata et saepe striata vel canaliculata subtus valde prominente et saepe carinata, nervis lateralibus utrinsecus 25–35 (cum nervis brevioribus debilioribus copiose interspersis) erecto-patentibus subrectis utrinque prominulis nervo marginali distincto conjunctis, rete venularum inconspicuo plerumque immerso; floribus ♂ apice ramulorum fasciculatis ex pulvinis inconspicuis inter folia terminales orientibus 7–10 per inflorescentiam, sub anthesi 30–40 mm. diametro, bracteis paucis papyraceis oblongo-deltaideis acutis ad 10 mm. longis suffultis; pedicellis teretibus crassis (2–3 mm. diametro) ad 18 mm. longis apicem versus incrassatis; sepalis 4 imbricatis, 2 exterioribus tenuiter coriaceis valde concavis late ovato-oblongis, 10–13 mm. longis, circiter 15 mm. latis, apice rotundatis, margine anguste scariosis et integris, 2 interioribus petalis similibus; petalis 4 carnosis sub anthesi patentibus suborbiculari-oblongis, 16–19 mm. longis, 12–15 mm. latis, apice rotundatis, margine anguste scariosis et integris, longitudinaliter dense sed inconspicue et irregulariter glanduloso-lineolatis; androecio conspicuo, toro semigloboso carnosio sub anthesi 5–8 mm. alto et circiter 10 mm. diametro, staminibus numerosissimis (circiter 200) confertis torum tegentibus, filamentis carnosis subteretibus 0.2–0.7 mm. longis, antheris crasse carnosis oblongis, 1.3–2 mm. longis, 0.8–1.2 mm. latis, saepe conspicue falcatis, apice obtusis, loculis 2 rimis conspicuis elongatis introrsis dehiscentibus; gynaecii rudimento parvo carnosio apice tori



inserto circiter 1.5 mm. longo, stigmatē peltato circiter 2 mm. diametro margine paullo undulato.

BRITISH NEW GUINEA: Western Division, Lower Fly River, east bank opposite Sturt Island, *Brass 8092* (TYPE), Oct. 1936 (sparse tree, in undergrowth on ridges in rain-forest; latex drying bluish white; leaf-venation dark beneath; flowers brownish pink).

Although there seems no doubt that *G. macrantha* belongs in § *Cambogia*, it is so distinct from other species of the region as to make comparison superfluous. It is characterized by its remarkably large and coarse leaves and flowers, terminal inflorescences, conspicuous pedicels, the great number of its stamens, and the presence of a gynaeceum-rudiment on the summit of the conspicuous antheriferous torus.

***Garcinia* (§ *Cambogia*) *balimensis* sp. nov.**

Arbor parva glabra, ramulis crassis (apicem versus 4–5 mm. diametro) rugosis subteretibus (vel distaliter leviter complanatis) cinereis; petiolis rugosis 2–3 mm. diametro 7–15 mm. longis, basi foveola conspicua elliptica margine incrassata instructis; laminis tenuiter coriaceis siccitate fuscis late ellipticis, 8–12.5 cm. longis, 5–8 cm. latis, basi late obtusis, apice rotundatis vel obtusis et saepe leviter emarginatis, costa supra leviter canaliculata subtus valde prominente, nervis lateralibus utrinsecus circiter 20 (cum nervis paullo debilioribus alternatis) patentibus utrinque valde prominulis nervo marginali conjunctis, venulis inconspicuis interdum paullo prominulis; floribus ♀ axillaribus sessilibus solitariis sub anthesi 17–20 mm. diametro, bracteis 4 late imbricatis papyraceis reniformibus circiter 2 mm. longis et 4.5 mm. latis rotundatis integris subtentis; sepalis 4 subaequalibus imbricatis submembranaceis late semiorbicularibus, 4–5 mm. longis, circiter 8 mm. latis, apice rotundatis, margine integris, dense glanduloso-lineolatis; petalis 4 anguste imbricatis crasse carnosis obovato-oblongis, circiter 10 mm. longis, 6–7 mm. latis, apice rotundatis, margine anguste scariosis et subintegris; staminodiis 16–18 uniseriatis circiter 3 mm. longis breviter stipitatis oblongis subacutis, loculis 2 longitudinalibus ut videtur rimis verticalibus dehiscentibus; ovario breviter cylindrico rugoso sub anthesi circiter 3 mm. diametro, loculis 8–12 uniovulatis, stigmatē 3–4 mm. diametro conspicue papilloso margine irregulariter lobato; fructibus axillaribus sessilibus subglobosis vel paullo complanatis, ad 3.5 cm. diametro (maturis?), basi sepalis persistentibus suffultis, apice stigmatē radiatim rugoso coronatis, pericarpio siccitate valde rugoso, seminibus 8–12 in pulpo sparso nidulantibus.

NETHERLANDS NEW GUINEA: Balim River, alt. 2100 m., *Brass* 11753 (TYPE), Dec. 1938 (small tree in secondary forest; flowers yellow; fruit green).

*Garcinia balimensis*, although represented only by a specimen with pistillate flowers, seems to belong to § *Cambogia* by virtue of its several-celled ovary, is oblong staminodes arranged in a single row, and its solitary sessile flowers. It is characterized by coriaceous and proportionately broad leaf-blades and large flowers. Although I cannot place it as a close ally of any described Papuan species, *G. balimensis* seems amply distinguished from those described by the above-mentioned combination of characters.

***Garcinia* (§ *Discostigma*) *Warrenii* F. v. Muell. Vict. Naturalist 8: 109. 1891; Vesque in DC. Monogr. Phan. 8: 641. 1893; Lauterb. Bot. Jahrb. 58: 24. fig. 5. 1922.**

*Garcinia Branderhorstii* Lauterb. Nova Guin. Bot. 8: 311. 1910.

BRITISH NEW GUINEA: Central Division, Biriatabu, alt. 460 m., *Brass* 568 (shapely tree 15 m. high, the bark light brown, somewhat scaly, the wood pale brown, used by natives for building and for handles of weapons; fruit with bright yellow sticky latex; native name: *fareti*); Hewa, Vailala River, *Brass* 1117 (small compact tree 15 m. high, with stiff branches, on clay ridges close to sago swamps; fruit brown, eaten by natives; native name: *ekobu*); Western Division, Lower Fly River, east bank opposite Sturt Island, *Brass* 7996 (rain-forest substage tree, plentiful on ridges, the bark brown-black, somewhat scaly; flowers cream colored); Lake Daviumbu, Middle Fly River, *Brass* 7471 (tree up to 14 m. high, abundant in lake-shore substage, the branches spreading, the bark gray-black, shallowly fissured; flowers cream colored, fragrant); Tarara, Wassi Kussa River, *Brass* 8430 (tree 10 m. high, common in rain-forest on clay banks of river; fruit red, subglobose, 3–3.5 cm. diam.; latex yellow).

The cited specimens surely represent *G. Branderhorstii*, which Lauterbach refers without question to the Queensland species *G. Warrenii*. Previously this species has been known from southern Netherlands New Guinea as well as Queensland.

***Garcinia* (§ *Tetrachoristemon*) *Lauterbachiana* sp. nov.**

Frutex glabra, ramulis gracilibus apicem versus 0.7–1 mm. crassis quadrangulatis demum subteretibus cinereis; petiolis gracilibus leviter canaliculatis 2–4 mm. longis, basi foveola inconspicua ornatis; laminis submembranaceis vel papyraceis siccitate viridi-olivaceis lanceolato-ellipticis, 2–4.5 cm. longis, 0.7–1.7 cm. latis, basi acutis vel obtusis,

apice obtusis vel obtuse et breviter acuminatis, margine integris et leviter recurvatis, costa utrinque leviter elevata vel supra subplana, nervis lateralibus utrinsecus 3–5 adscendentibus nonnunquam furcatis utrinque paullo prominulis nervo marginali indistincte conjunctis, rete venularum immerso; stipulis membranaceis saepe conspicuis ad 5 mm. longis caducis, floribus ♂ solitariis (vel paucis?) ex pulvinis inconspicuis subsessilibus (pedicellis circiter 1.5 mm. longis), alabastro ellipsoideo circiter 2.5 mm. longo et 2 mm. diametro; sepalis 4 membranaceis elliptico-oblongis, circiter 2 mm. longis et 1.5 mm. latis, apice rotundatis, margine minute erosulis, conspicue longitudinaliter venosis; petalis 4 obovato-oblongis, 2.5–3 mm. longis, circiter 1 mm. latis, inferne carnosae superne submembranaceae, apice rotundatis, margine apicem versus scariosae et subintegris; staminibus 4 in apice tori inconspicui erectis, filamentis carnosae brevibus (circiter 0.2 mm. longis) basi connatis, antheris obovoideo-oblongis, 1–1.2 mm. longis, apice truncatis et 0.5 mm. latis, basim versus angustatis, rimis lateralibus verticalibus dehiscentibus; ovario nullo.

NORTHEASTERN NEW GUINEA: Morobe District, Ogeramngang, alt. 1700 m., *Clemens 5441* (TYPE), Feb. 18, 1937; Yunzaing, alt. 1400 m., *Clemens 2975* (undershrub, on forested hills; buds orange), *Clemens 6470a*; Finisterre Gebirge, alt. 1300 m., *Schlechter 19105* (A, NY).

The cited specimens are sterile, with the exception of a single nearly mature flower on the type and a few buds on *Clemens 2975*; nevertheless the species is so readily recognized by its foliage that I have no doubt that the specimens are conspecific.

*Garcinia Lauterbachiana* shows a close affinity with *G. maluensis* Lauterb., the only previously known member of § *Tetrachoristemon*, which it resembles in its habit, stipules, leaf-texture, and floral structure. The new species differs from *G. maluensis* in its remarkably small leaf-blades, its truncate but not apically papillose anther-connectives, and its lack of a gynaeceum-rudiment in the staminate flowers. Otherwise, especially in texture of sepals and petals, the staminate flowers of the two species are nearly identical.

***Garcinia* (§ *Tetrachoristemon*) *rhynchophylla* sp. nov.**

Arbor gracilis 3–4 m. alta glabra, ramulis gracilibus apicem versus 1 mm. vel minus crassis quadrangulatis demum subteretibus cinereis striatis; petiolis gracilibus leviter canaliculatis, 4–5 mm. longis, basi foveola inconspicua praeditis; laminis submembranaceis siccitate viridibus anguste ovato-lanceolatis, 2.5–5 cm. longis, 0.7–1.3 cm. latis, basi acutis, apice caudato-acuminatis (acumine 7–15 mm. longo acuto incon-

spicue calloso), margine integris, costa supra leviter prominula et canaliculata subtus paullo elevata, nervis lateralibus utrinsecus 8–10 (cum aliis debilioribus interspersis) interdum furcatis patentibus utrinque minute prominulis marginem versus indistincte anastomosantibus, venulis intricate ramulosis utrinque minute prominulis vel subimmersis; stipulis linearibus 3–5 mm. longis mox caducis; fructuum pedicellis gracilibus ad 5 mm. longis; fructibus axillaribus subglobosis ad 2.3 cm. diametro (immaturis?), basi sepalis 4 imbricatis papyraceis semiorbicularibus ad 2 mm. longis et 3 mm. latis suffultis, apice rotundatis et stigmatibus sessilibus circiter 2 mm. diametro radiatim rugoso coronatis, extra ut videtur levibus, pericarpio tenui, seminibus paucis in pulpo sparso nidulantibus.

NETHERLANDS NEW GUINEA: 6 km. southwest of Bernhard Camp, Idenburg River, alt. 1200 m., *Brass* 12867 (TYPE), Feb. 1939 (tree 3–4 m. high, frequent in rain-forest undergrowth; unripe fruit up to 2.3 cm. diam.).

*Garcinia rhynchophylla*, based on the above cited fruiting specimen, is almost certainly closely related to *G. Lauterbachiana* (above described), differing in its caudate-acuminate leaf-blades with more numerous and spreading lateral nerves, more obvious veinlets, and presumably pedicellate flowers (as indicated by the pedicels of the fruits).

***Garcinia*** (§ *Hebradendron*) ***subtilinervis*** F. v. Muell. Descr. Notes Pap. Pl. 1: 85. 1877; Vesque in DC. Monogr. Phan. 8: 488. 1893; Lauterb. Nova Guin. Bot. 8: 312. 1910; Lauterb. Bot. Jahrb. 58: 38. 1922.

BRITISH NEW GUINEA: Koitaki, alt. 450 m., *Carr* 12567 (NY), 12795 (NY); Kanosia, sea-level, *Carr* 11299 (?) (NY), 11301 (?) (NY); Western Division, Palmer River, 2 miles below junction with Black River, alt. 100 m., *Brass* 7310 (small slender tree 3 m. high, common in ridge-forest undergrowth; flowers cream colored), *Brass* 7006 (forest substage tree 6–8 m. high, common on low ridges and river-flats; leaves coriaceous, with recurved margins; fruit green, sessile on old wood), *Brass* 7077 (tree 8–10 m. tall, common constituent of ridge-forest substage; branches slender, always heavily mossed; fruit sessile below leaves, pale green); Lower Fly River, east bank opposite Sturt Island, *Brass* 8061 (undergrowth tree 2–3 m. high, in rain-forest on ridges; branches drooping, horizontal; leaf-nerves obscure; fruit red, solitary, sessile).

The cited specimens agree very closely with the original description, although this is so brief that comparison with the type (*D'Albertis* from

the Fly River) is desirable. Nevertheless, I refer our collections to the species with some confidence; they bear a close superficial resemblance to the Indian *G. cowa* Roxb., a point emphasized by Mueller. Lauterbach cited a specimen of *G. subtilinervis* from southern Netherlands New Guinea and referred the species to § *Cambogia* with a question. If my identification is correct, however, the species belongs in § *Hebradendron*. Previous descriptions being incomplete, it seems advisable to redescribe the species on the basis of the above cited specimens:

Glabrous slender tree to 12 m. high, the branchlets slender, distally quadrangular, the older ones subterete and cinereous; petioles slender (usually less than 1 mm. in diameter), shallowly canaliculate, 4–10(–20) mm. long, inconspicuously foveolate at base; leaf-blades papyraceous or submembranaceous when dried, olivaceous, narrowly elliptic or obovate-elliptic, 7–12(–20) cm. long, 3–5(–7.5) cm. broad, obtuse to subattenuate at base, acuminate at apex (acumen 5–15 mm. long, obtuse), entire and narrowly recurved at margins, the costa slightly raised to shallowly impressed above, subprominent beneath, the lateral nerves usually 10–12 per side, arcuate-ascending, prominulous (usually inconspicuously so) on both sides, the veinlets few, inconspicuous, sub-immersed; ♂ flowers few (apparently 2–5 per inflorescence, probably often solitary at anthesis), on inconspicuous axillary glomerules, 3–4 mm. in diameter at anthesis, subtended by minute bracts, pedicellate (pedicels very slender, 2–3 mm. long); sepals 4, membranous, subequal, elliptic-oblong, 1.5–2 mm. long, 1.3–1.5 mm. broad, rounded at apex, entire at margin, few-nerved; petals 4, thin-carnose, obovate-oblong, 2–2.5 mm. long, 1.3–1.5 mm. broad, rounded, entire, soon caducous; androecium erect, 1.3–1.5 mm. long, the stalk carnose, subterete or lightly angled, about 0.5 mm. long, the stamens about 12, congested on the subglobose distal portion of the androecium; filaments carnose, stout, 0.1–0.15 mm. long, the anthers horizontally affixed, peltate, 0.4–0.6 mm. in diameter, 4–8-loculed, dehiscing by a continuous lateral cleft; gynaecium-rudiment lacking; fruit solitary, subsessile on older branchlets, subglobose or slightly flattened, at maturity up to 5.5 cm. in diameter (ex Brass), with subpersistent sepals at base, 8–12-costate (probably inconspicuously so when fresh), the seeds 8–12, imbedded in somewhat fibrous pulp.

Of the cited specimens, only *Brass 7310* bears flowers; the other Brass specimens are in fruit, no. *7006* having unusually large leaves and the only mature fruits; the Carr specimens are sterile. From the staminal arrangement, the described species is surely a member of § *Hebradendron*, in which, however, it is not closely allied to the only

other Papuan species, *G. fusco-petiolata* Lauterb., a species with free stamens. *Garcinia subtilinervis* is readily distinguished from other members of § *Hebradendron* by its few stamens aggregated and subsessile on a short androecium, by its small flowers, and by its thin acuminate leaf-blades.

**Garcinia** (§ *Daedalanthera*) **Hunsteinii** Lauterb. Bot. Jahrb. 58: 40. fig. 8. 1922.

NETHERLANDS NEW GUINEA: 2–6 km. southwest of Bernhard Camp, Idenburg River, alt. 800–1200 m., *Brass & Versteegh* 12536, 13154, 13531 (trees 25–30 m. high, rare or occasional in primary rain-forest on ridges, the trunk 39–47 cm. diam., the crown small, not wide-spreading, the bark 4–9 mm. thick, gray, fairly smooth, with a little yellow latex, the wood yellow to brown; young fruits green, the ripe ones red).

Reported as fairly abundant between 1000 and 1500 m. elevation in the adjacent portion of Northeastern New Guinea, *G. Hunsteinii* is apparently here first reported from the Netherlands section of the island. Our specimens are in fruit, but agree very well with the original description and figure; they have leaf-blades often slightly larger (up to 10.5 cm. long and 4.5 cm. broad) than those originally described. The coriaceous bluntly acuminate leaf-blades with comparatively few and immersed lateral nerves distinguish the species.

**Garcinia** (§ *Daedalanthera*) **Schraderi** Lauterb. Bot. Jahrb. 58: 43. 1922.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, alt. about 2680 m., *Brass & Versteegh* 10478 (tree 26 m. high, common in ridge-forests, the trunk 33 cm. diam., the crown not wide-spreading, the bark 11 mm. thick, with yellow latex, brown, fairly rough, the wood soft, yellowish; flowers yellow; young fruits green, the ripe ones brown); 15 km. southwest of Bernhard Camp, Idenburg River, alt. 1780 m., *Brass & Versteegh* 11196 (tree 27 m. high, common in primary forest on the slope of a ridge, the trunk 47 cm. diam., the crown not wide-spreading, the bark 10 mm. thick, dark brown, fairly rough, with yellow latex, the sap-wood light brown, the heart-wood dark brown). NORTHEASTERN NEW GUINEA: Morobe District, Ogeramang, alt. 1550–1850 m., *Clemens* 4737 (tall tree on forest-ridge, the trunk at least 45 cm. diam.; flowers green), 4622, 5081, 6246.

The species has previously been reported only from Northeastern New Guinea; it is apparently of considerable abundance at an altitude unusually high for the genus.

**Garcinia** (§ *Daedalanthera*) **Archboldiana** sp. nov.

Arbor glabra ad 25 m. alta, ramulis cinereis crassis (apicem versus 3–4 mm. diametro) juventute complanatis demum subteretibus et rugosis, petiolis 2–3 mm. crassis leviter canaliculatis 6–10 mm. longis nigrescentibus, basi foveola elliptica praeditis; laminis tenuiter coriaceis siccitate fusco- vel viridi-olivaceis elliptico-oblongis, 8–15 cm. longis, 3–6 cm. latis, basi attenuatis et in petiolum decurrentibus, apice rotundatis vel late obtusis, margine integris et anguste recurvatis, costa supra leviter elevata et canaliculata subtus prominente, nervis lateralibus utrinsecus numerosissimis (1–1.5 mm. distantibus et rete venularum irregulariter conjunctis) patentibus nonnunquam furcatis utrinque prominulis nervo marginali conjunctis, venulis subimmersis vel minute prominulis; floribus ♂ paucis (1–3 per inflorescentiam) ex pulvinis inconspicuis in axillis foliorum mox delapsorum orientibus, bracteis coriaceis minutis pluribus subtentis; pedicellis crassis (2–3 mm. diametro) saepe verrucosis 4–6 mm. longis; sepalis 4 imbricatis late orbicularibus concavis rotundatis integris, 2 exterioribus tenuiter coriaceis, circiter 2 mm. longis, 3.5–4 mm. latis, 2 interioribus papyraceis, circiter 4 mm. longis, 6–7.5 mm. latis; petalis 4 imbricatis carnosis late ellipticis, 7–10 mm. longis, 5–7 mm. latis, apice rotundatis, margine obscure undulatis; phalangibus 4 basi connatis profunde et conspicue lobatis, 5–6 mm. longis, apicem versus copiose antheriferis; staminibus numerosissimis, antheris subsessilibus subpeltatis vel ellipsoideis, 0.3–0.4 mm. diametro, loculis 3 vel 4 rimis brevibus horizontalibus apicali-lateralibus dehiscentibus; ovario nullo.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 300 m., *Brass & Versteegh 13596* (TYPE), April 20, 1939 (tree 25 m. high, rare in primary rain-forest on a ridge, the trunk 64 cm. diam., the crown not wide-spreading, the bark 7 mm. thick, brown, scaly, with some yellow sap, the wood light brown; flowers white).

*Garcinia Archboldiana* is one of a group of three new species of § *Daedalanthera* characterized by a reduction in the number of anther-locules and the absence of a gynaeceum-rudiment in the staminate flowers. These three species are related to *G. Schraderi* Lauterb. and *G. Pullei* Lauterb., differing from both by the anthers and by obvious foliage-characters. *Garcinia Archboldiana* has large leaf-blades and very large flowers for this group of species, and is further characterized by numerous secondary nerves and deeply divided phalanges. The four primary phalanges, in fact, are difficult to observe, as the numerous finer divisions appear essentially free from each other. The extremely small and numerous anthers, with only 3 or 4 locules, also distinguish the new species.

Two other specimens from the same region are possibly conspecific with the type of the new species; these are: 6 km. southwest of Bernhard Camp, alt. 1200 m., *Brass 13011* (tree 25 m. high, in minor canopy of rain-forest, the trunk about 50 cm. diam., the bark smooth, brown; fruit green); 15 km. southwest of Bernhard Camp, alt. 1780 m., *Brass & Versteegh 11199* (tree 25 m. high, occasional in primary forest on the slope of a ridge, the trunk 53 cm. diam., the crown not wide-spreading, the bark 4 mm. thick, scaly, brown, with dark yellow sap, the wood light brown; young fruit green). These plants, occurring at substantially higher elevations than the type, differ from it in their somewhat coarser leaf-blades and petioles; their fruits are subglobose, up to 3 cm. in diameter, with stout pedicels and conspicuous stigmas. Lacking specimens from intermediate elevations, I hesitate definitely to refer these two specimens to *G. Archboldiana*.

**Garcinia** (§ *Daedalanthera*) **Engleriana** sp. nov.

Arbor glabra ad 28 m. alta, ramulis fusco-cinereis crassis (apicem versus 3–4 mm. diametro et complanatis) demum subteretibus et rugosis; petiolis nigrescentibus circiter 2 mm. diametro semiteretibus 5–8 mm. longis, basi foveola conspicua margine incrassata praeditis; laminis subcoriaceis siccitate fusco-olivaceis elliptico- vel obovato-oblongis, 5–9.5 cm. longis, 2.5–4.5 cm. latis, basi attenuatis et in petiolum decurrentibus, apice rotundatis vel late obtusis, margine integris et interdum conspicue revolutis, costa supra leviter elevata subtus prominente, nervis lateralibus utrinsecus numerosis (1–1.5 mm. distantibus) patentibus raro furcatis utrinque prominulis nervo marginali conjunctis, rete venularum inconspicuo subimmerso; floribus ♂ sub anthesi 1–4 per inflorescentiam 13–15 mm. diametro ex pulvinis conspicuis in axillis foliorum demum delapsorum orientibus, bracteis minutis deltoideis numerosis subtentis; pedicellis 5–11 mm. longis circiter 2 mm. crassis saepe leviter quadrangulatis; sepalis 4 papyraceis vel tenuiter coriaceis semiorbicularibus concavis rotundatis integris, 2 exterioribus 1.5–3 mm. longis et 2.5–3.5 mm. latis, 2 interioribus 5–6 mm. longis et latis; petalis 4 (vel raro 5) tenuiter carnosis obovato-oblongis, 7–8 mm. longis, 5–6 mm. latis, rotundatis, margine anguste scariosis et subintegris vel obscure undulatis; phalangibus circiter 16 patentibus carnosis 5–6 mm. longis, basi connatis, stipite basim versus 1–2 mm. diametro, ramulis paucis apicem versus; staminibus 15–20 per phalangem, filamentis carnosis brevibus (ad 0.4 mm. longis) vel subnullis, antheris subpeltatis vel ellipsoideis, 0.6–0.8 mm. diametro, margine undulatis, loculis 3–7 rimis brevibus horizontalibus apicali-lateralibus interdum confluentibus dehiscentibus; ovario nullo.



NETHERLANDS NEW GUINEA: 18 km. southwest of Bernhard Camp, Idenburg River, alt. 1970 m., *Brass & Versteegh 12508* (TYPE), Feb. 7, 1939 (tree 28 m. high, common in primary forest on slope of a ridge, the trunk 52 cm. diam., the crown not wide-spreading, the bark 4 mm. thick, brown, with yellow latex, the wood white; flowers white); 15 km. southwest of Bernhard Camp, alt. 1800 m., *Brass 12099* (tree 25 m. high, co-dominant in mossy forest, the trunk shortly spurred at base, the bark pale brown, lenticellate, with copious yellow latex; flowers white).

Like the preceding new species (*G. Archboldiana*), *G. Engleriana* differs from other species of the section in its deeply divided phalanges and comparatively few anther-locules. In the present species the phalanges are so deeply divided that the presumably fundamental four are no longer discernible. The anthers are larger than those of *G. Archboldiana* and there are obvious floral and foliage differences between the two species.

***Garcinia* (§ *Daedalanthera*) *idenburgensis* sp. nov.**

Arbor glabra ad 33 m. alta, ramulis fusco-cinereis apicem versus 1.5–2 mm. crassis obscure quadrangulatis demum teretibus; petiolis nigrescentibus circiter 1.5 mm. diametro leviter canaliculatis 7–11 mm. longis, basi foveola inconspicua ornatis; laminis subcoriaceis siccitate fusco-viridibus obovato-ellipticis, 7–11 cm. longis, 3.5–5 cm. latis, basi attenuatis et in petiolum decurrentibus, apice obtuse cuspidatis, margine integris et minute revolutis, costa supra paullo subtus valde elevata, nervis lateralibus utrinsecus numerosis (1–1.5 mm. distantibus) erecto-patentibus raro furcatis utrinque planis vel minute prominulis nervo marginali conjunctis, venulis immersis obscuris; floribus ♂ 5–16 per inflorescentiam sub anthesi 7–8 mm. diametro ex pulvinis conspicuis (3–5 mm. diametro) in axillis foliorum saepe delapsorum orientibus, bracteis minutis numerosis suffultis; pedicellis sub anthesi 5–8 mm. longis gracilibus (0.3–0.5 mm. diametro); sepalis 4 papyraceis vel submembranaceis, oblongis vel obovato-oblongis, apice rotundatis, margine integris, 2 exterioribus valde concavis circiter 2.5 mm. longis et latis, 2 interioribus tenuioribus, 3.5–4 mm. longis, circiter 3 mm. latis; petalis 4 sub anthesi erecto-patentibus tenuiter carnosis elliptico- vel obovato-oblongis, 4.5–5 mm. longis, circiter 3 mm. latis, rotundatis, integris; phalangibus 4 carnosis 2.5–3 mm. longis copiose ramulosis, basi connatis; staminibus apicem phalangis versus aggregatis 30–35 per phalangem, antheris subsessilibus subpeltatis carnosis 0.5–0.6 mm. diametro, loculis plerumque 4 rimis distinctis parvis horizontalibus apicali-lateralibus dehiscentibus; rudimento gynaecii nullo vel minute pulvinato.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 100 m., *Brass & Versteegh 13570* (TYPE), April 15, 1939 (tree 33 m. high, frequent in primary rain-forest on the lower mountain-slopes, the trunk 62 cm. diam., the crown not wide-spreading, the bark 5 mm. thick, brown, scaly, with some dark yellow latex, the wood brown; flowers white).

*Garcinia idenburgensis* seems related to *G. Pullei* Lauterb., from which it differs in its thicker and larger leaf-blades with less obvious venation, larger flowers, and anthers with fewer locules (those of *G. Pullei* having 10–20 locules). The flowers of *G. idenburgensis* are more numerous and smaller than those of the preceding two new species, while the phalanges are clearly four.

### ***Garcinia platyphylla* sp. nov.**

Arbor glabra ad 20 m. alta, ramulis crassis fuscis apicem versus complanatis inferne subteretibus; petiolis rugosis semiteretibus 2–3 mm. crassis 7–17 mm. longis, basi foveola conspicua coriacea margine ad 3 mm. incrassata praeditis; laminis tenuiter coriaceis late ellipticis vel obovato-ellipticis, 10–20 cm. longis, 6–14.5 cm. latis, basi obtusis et petiolum paullo decurrentibus, apice obtusis vel rotundatis, margine integris et paullo recurvatis, costa valida supra paullo elevata et striata subtus prominente, nervis lateralibus numerosissimis (1–3 mm. distantibus rete venularum irregulariter conjunctis) erecto-patentibus rectis utrinque prominulis nervo marginali conjunctis, venulis indistincte prominulis; inflorescentiis ♂ cymosis terminalibus ut videtur 10–20-floris (sed floribus ante anthesi saepe delapsis) 3–5 cm. longis et latis, pedunculo brevi et ramulis paucis crassis, bracteis coriaceis concavis ovato-deltaideis subacutis 2–4 mm. longis; floribus apice ramulorum inflorescentiarum binis vel ternatis, pedicellis ad 5 mm. longis apice bibracteolatis et articulatis; sepalis 4 imbricatis papyraceis concavis semiorbicularibus integris, 2 exterioribus circiter 3 mm. longis et 4.5 mm. latis, 2 interioribus circiter 4 mm. longis et 6 mm. latis; petalis 5 (immaturis) carnosis oblongo-obovatis, alabastro circiter 5 mm. longis et 4 mm. latis, rotundatis, integris; toro androecii carnosio subcupuliformi margine elevato, staminibus 40–50 apicem tori versus congestis, antheris subsessilibus immaturis ut videtur obovoideo-oblongis (0.5–0.8 mm. longis) 2 (vel 3–4?)-loculatis, rimis longitudinalibus lateralibus dehiscen-tibus (?); rudimento gynaecii circiter 1.3 mm. longo, stipite carnosio, stigmate circiter 0.6 mm. diametro minute ruguloso; fructibus (inflorescentiis fructiferis non visis) elongato-ovoideis, ad 5.5 cm. longis et 2.5 cm. latis, basi inconspicue stipitatis et sepalis persistentibus suffultis,

apicem versus gradatim attenuatis, apice ipso obtusis et stigmatibus sessilibus 4–5 mm. diametro bilobato ruguloso coronatis, extra levibus, pericarpio siccitate coriaceo 0.5–1 mm. crasso, seminibus 2 elongato-ovoideis rugulosis, dissepimento membranaceo, pulpo ut videtur sparso.

SOLOMON ISLANDS: *Bougainville*: Siwai, *Waterhouse 108* (NY, TYPE, Y), Oct. 1932 (tree 8–9 m. high; native name: *matumatu*); Koniguru, Buin, alt. 900 m., *Kajewski 2016* (tree up to 20 m. high, common in rain-forest; native name: *nakamolo*).

The type collection bears immature staminate flowers, the Kajewski specimen being accompanied by detached fruits. As these two specimens are nearly identical in the details of their foliage, I have little hesitation in referring them to the same species, although the fruit of the second is not of the type commonly found in *Garcinia*. Comparison with other species of the region leaves little doubt that a new species is represented, but it seems inadvisable at present to refer it to a section. The flowers, unfortunately, are not sufficiently mature to permit the structure of the anthers to be entirely understood; it seems probable that a new section may eventually be desirable for this species. However, it is apparent that the anthers are subsessile on the margin of a continuous and somewhat cupuliform structure surrounding the gynaeceum-rudiment. This arrangement is suggestive of § *Conocentrum*. The young anthers of our plant are crowded and appear to have three or four locules, but more mature anthers seem to be 2-loculed and longitudinally dehiscent, as in § *Cambogia*. The precise shape of the floral axis of the new species is not found in § *Cambogia*, which, furthermore, appears never to have only two cells in the ovary. *Garcinia platyphylla* is further characterized by its thick leaf-blades with numerous lateral nerves, its cymose inflorescences, and its 5 petals.

#### PENTAPHALANGIUM Warb.

***Pentaphalangium latissimum*** (Miq.) Lauterb. Bot. Jahrb. **58**: 46. 1922.

*Garcinia latissima* Miq. Ann. Mus. Bot. Lugd.-Bat. **1**: 209. 1864; Pierre, Fl. Forest. Cochinch. **2**: XXXVI. 1883; Vesque in DC. Monogr. Phan. **8**: 338. 1893.

NETHERLANDS NEW GUINEA: 2 km. southwest of Bernhard Camp, Idenburg River, alt. 800 m., *Brass & Versteegh 13196* (tree 25 m. high, frequent in primary rain-forest on the slope of a ridge, the trunk 56 cm. diam., the crown not wide-spreading, the bark 17 mm. thick, black, scaly, with a fair amount of light yellow latex, the wood yellow-brown; fruits green).

The species was based on a specimen collected in Halmahera by Teysmann and subsequently cultivated at Buitenzorg; a sterile specimen from this cultivated plant (no. VI, c, 28) is available in the herbarium of the New York Botanical Garden. Although the species is included by Lauterbach in his treatment of the New Guinea Guttiferae, his description and his new combination are apparently based entirely on a staminate specimen from the Buitenzorg plant. It seems, therefore, that the collection by Brass & Versteegh is the first of the species from New Guinea. Our specimen has foliage which is an excellent match for that of the Buitenzorg plant, and its fruits agree very well with those described by Pierre and Vesque.

***Pentaphalangium pachycarpum* sp. nov.**

Arbor glabra ad 24 m. alta, ramulis crassis apicem versus 4–8 mm. diametro subteretibus rugosis fusco-cinereis, novellis in nodis paullo applanatis; petiolis validis rugosis circiter 3 mm. diametro leviter canaliculata 15–32 mm. longis, basi foveola elliptica margine valde coriacea et elevata praeditis; laminis coriaceis siccitate fuscis obovato-vel oblongo-ellipticis, 9–22 cm. longis, 5.5–11.5 cm. latis, basi subacutis vel attenuatis et in petiolum decurrentibus, apice rotundatis interdum emarginatis, margine integris et anguste recurvatis, costa valida supra conspicue elevata subtus prominente carinata, nervis secundariis utrinsecus numerosis (1–3 mm. distantibus, alternatis debilioribus) patentibus nonnunquam furcatis utrinque prominulis vel supra subimmersis nervo marginali inconspicuo conjunctis, venulis immersis; inflorescentiis ♀ terminalibus crassis ad 3 cm. longis breviter spicatis 3–7-floris, pedunculo brevi et rhachi rugosis subteretibus 5–6 mm. crassis, floribus sessilibus bracteis papyraceis deltoideo-suborbicularibus rotundatis integris circiter 2 mm. longis et 4–5 mm. latis subtentis; sepalis 3 vel 4 imbricatis tenuiter coriaceis semiorbicularibus, circiter 4 mm. longis, 6–8 mm. latis, apice rotundatis, margine anguste scariosis et integris; petalis 5 vel 6 papyraceis obovato-oblongis, 10–11 mm. longis, 8–10 mm. latis, apice rotundatis, basim versus angustatis, margine scariosis et integris saepe inflexis; phalangibus 5 vel 6 trienti inferiori petalorum adnatis inconspicuis 2–3 mm. longis irregulariter divisis ut videtur interdum nullis; ovario breviter cylindrico rugoso sub anthesi 4–5 mm. diametro, stigmate carnosio circiter 5 mm. diametro obscure et regulariter ruguloso, loculis 2 uniovulatis; fructibus elongato-ovoideis, maturitate ad 10 cm. longis et 4.5 cm. latis, basi rotundatis et sepalis persistentibus suffultis, apice stigmate conspicuo ad 1 cm. diametro coronatis, pericarpio siccitate crasse coriaceo (lignoso?) 4–7 mm. crasso utrinque sublevi, semini-

bus 2 lanceolato-ovoideis, ad 8 cm. longis et 2 cm. latis, siccitate coriaceis, apicem versus angustatis, extra conspicue impresso-reticulatis.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 50–100 m., *Brass & Versteegh 13550* (TYPE), April 10, 1939 (tree 24 m. high, occasional in primary rain-forest on lower mountain-slopes, the trunk 72 cm. diam., the crown fairly wide-spreading, the bark 10 mm. thick, black, scaly, with some white latex, the wood yellow-brown; flowers white; young fruits green, the ripe ones red), *Brass 14065* (tree about 20 m. high, common in flooded rain-forest of river-plain; fruits green).

The position of this plant in *Pentaphalangium* is indicated by the leaf-texture, fruit-shape (suggesting that of *P. carolinense* Lauterb.), and position of the flowers, as well as by the presence of staminodial phalanges on the petals of the pistillate flowers. On the type-specimen very few flowers are available, and the above description, based only on two dissections, may require future amplification; no. 14065 bears only foliage and fruits. Of the two flowers dissected, one has six petals with obvious but not conspicuous phalanges, while the other, curiously, has five entirely smooth petals.

From its only close ally, *P. latissimum* (Miq.) Lauterb., the new species differs in its somewhat smaller leaves, proportionately broader sepals and petals, and much longer and proportionately narrower fruits.

***Pentaphalangium Brassii* sp. nov.**

Arbor glabra ad 20 m. alta, ramulis crassis apicem versus 4–8 mm. diametro valde rugosis, novellis complanatis vel leviter quadrangulatis demum subteretibus; petiolis rugosis 2–4 mm. crassis canaliculatis 10–25 mm. longis, basi foveola elliptica margine valde crassa et elevata praeditis; laminis subcoriaceis oblongo-ellipticis, 13–32 cm. longis, 6–16 cm. latis, basi acutis vel attenuatis et in petiolum decurrentibus, apice rotundatis vel leviter emarginatis, margine integris et paullo recurvatis, costa valida supra elevata subtus prominente, nervis lateralibus utrinsecus numerosis (1–3 mm. distantibus, alternatis debilioribus) rectis plerumque simplicibus utrinque prominulis nervo marginali conjunctis, rete venularum inconspicuo vel in laminis novellis leviter prominulo; inflorescentiis ♀ terminalibus crassis 1.5–2.5 cm. longis cymosis vel breviter spicatis 3–7-floris, pedunculo brevi rugoso 3–4 mm. crasso, bracteis basi ramulorum inconspicuum oblongis acutis ad 8 mm. longis; floribus sessilibus sub anthesi 22–25 mm. diametro, bracteis papyraceis deltoideis acutis carinatis 3–4 mm. longis subtentis; sepalis 4 coriaceis imbricatis late ovato-semiorbicularibus, 4–6 mm. longis, 7–8 mm. latis,

rotundatis, margine scariosis et integris; petalis 5 papyraceis obovato-oblongis, 13–14 mm. longis, 8–9 mm. latis, basim versus angustatis, margine integris vel obscure erosulis, venulis distaliter inconspicue reticulatis; phalangibus inconspicuis 1.5–2 mm. longis pauciramosis basi petalorum adnatis; ovario breviter subcylindrico sulcato sub anthesi 3–5 mm. diametro apicem versus obscure ruguloso, stigmatate conspicuo carnosio convexo 6–7 mm. diametro minute ruguloso, loculis 3 uniovulatis; fructibus ovoideis, maturitate ad 9 cm. longis et 5 cm. latis, basi rotundatis et sepalis persistentibus suffultis, apice stigmatate ad 1 cm. diametro coronatis, pericarpio coriaceo siccitate 2–5 mm. crasso utrinque sublevi, dissepimentis subcoriaceis, seminibus 3 (interdum 1 vel 2) oblongo-ovoides, ad 7 cm. longis et 3 cm. latis, siccitate valde coriaceis, apicem versus gradatim angustatis, testa subcoriacea inconspicue impresso-reticulata.

BRITISH NEW GUINEA: Lower Fly River, east bank opposite Sturt Island, *Brass 8206* (TYPE), Oct. 1936 (dense-foliaged tree 20 m. high, common on banks of river in flood-plain rain-forest, the trunk cylindrical, the bark dark, rough, fissured, the latex cream colored, the branches short and weak; flowers white, the stigma yellow; ripe fruit red).

*Pentaphalangium Brassii* bears a close resemblance to the preceding new species (*P. pachycarpum*), but differs in its slightly more slender pistillate inflorescence with acute and carinate rather than rounded bracts, in its longer and proportionately narrower petals with the staminodial phalanges at the base rather than higher on the face of the petal, in its 3 rather than 2 ovary-locules, in the thinner pericarp of its fruit, and in its proportionately broader seeds with less obvious surface reticulation. The flowers dissected all agree in having 4 sepals, 5 petals, and 3 ovary-locules, but of course additional material may prove these numbers unstable.

***Pentaphalangium solomonense* sp. nov.**

Arbor glabra 10 m. alta, ramulis fuscis apicem versus subcomplanatis et 3–4 mm. crassis demum subteretibus rugosis lenticellatis; petiolis rugosis semiteretibus circiter 2 mm. crassis 10–15 mm. longis, basi foveola elliptica margine coriacea et valde (ad 2 mm.) elevata praeditis; laminis crasse coriaceis siccitate fuscis obovato-ellipticis, 7–13.5 cm. longis, 3.5–7 cm. latis, basi subattenuatis et in petiolum decurrentibus, apice rotundatis vel inconspicue emarginatis, margine integris et leviter recurvatis, costa supra subplana vel paullo elevata subtus prominente carinata, nervis secundariis utrinsecus numerosis (1–1.5 mm. distantibus) erecto-patentibus utrinque prominulis vel supra subimmersis mar-

ginem versus saepe furcatis nervo marginali conjunctis, rete venularum subtus interdum leviter prominulo; inflorescentiis ♀ terminalibus ad 3 cm. longis trichotome cymosis (3-)9-15-floris (sub anthesi floribus paucis), pedunculo brevi et ramulis paucis rugosis 2-3 mm. crassis saepe leviter angulatis, bracteis basi ramulorum coriaceis oblongis subacutis 4-7 mm. longis, floribus sessilibus bracteis coriaceis deltoideo-semiorbicularibus rotundatis circiter 2 mm. longis et 3-4 mm. latis subtentis; sepalis 4 late imbricatis coriaceis concavis semiorbicularibus, 3.5-5 mm. longis, 5-6 mm. latis, rotundatis, margine scariosis et integris; petalis 5 (raro 4) carnosis obovato-oblongis (in specimine nostro immaturis), 6-7 mm. longis, 3-4 mm. latis, apice rotundatis, basim versus angustatis, margine integris; phalangibus trienti inferiori petalorum adnatis inconspicuis simplicibus stamina 1-3 sterilia gerentibus (filamentis carnosis circiter 0.2 mm. longis, antheris subglobosis vel transverse ellipsoideis 0.5-0.8 mm. diametro); ovario obovoideo-cylindrico ante anthesim 2-3 mm. diametro sulcato carnosio, stigmate conspicue ruguloso circiter 2.5 mm. diametro margine irregulariter lobulato, loculis 2 uniovulatis; fructibus juvenilibus elliptico-subglobosis, basi rotundatis et sepalis persistentibus suffultis, apice stigmate bilobato ruguloso ad 3.5 mm. diametro coronatis, pericarpio coriaceo.

SOLOMON ISLANDS: N'Gela Group (Florida Islands), Olevuga: Brass 3484 (TYPE), Jan. 16, 1933 (tree 10 m. high, solitary in a rain-forest gully on grassland, the branches stiffly spreading, the bark hard, rough, dark brown, with a white sticky latex, the leaf-blades stiff, with pale midribs; immature fruits pale yellow, with black persistent stigmas).

Compared with the species thus far known in *Pentaphalangium*, *P. solomonense* is unusual in having the staminodial phalanges of the petals of its pistillate flowers composed of 1-3 abortive stamens; as a rule these phalanges are merely irregularly laciniate tissue with no approximation of true anthers. Conspicuously different from the Papuan species thus far known, *P. solomonense* seems most closely related to *P. carolinense* Lauterb., from which it differs in its much thicker leaf-texture; in *P. carolinense* the phalanges of the pistillate flowers have numerous branches (Kanehira, Fl. Micrones. 241. fig. 112, C. 1933).

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## PLANTAE PAPUANAE ARCHBOLDIANAE, VII\*

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THIS paper is a continuation of our study of the smaller families of the Papuan collections. Lack of authentic material for comparison, coupled with the fluidity of generic lines, has made the identification of the Vitaceae a particularly difficult task. The family is in great need of critical revision, and, in order to clear up some of the loose concepts, it should be surveyed as a whole rather than geographically.

## VITACEAE

**Ampelocissus** Planchon

**Ampelocissus acetosa** Planchon, *Vigne Améric.* 96. 1885; Planchon in DC. *Monog. Phan.* 5: 381. 1887; Domin, *Bibl. Bot.* 22: 925. 1927.

*Cissus acetosa* F. v. Muell. *Trans. Phil. Inst. Vict.* 3: 24. 1859.

*Vitis acetosa* F. v. Muell. *Pl. Vict.* 1: 94. 1860-62; Benth. *Fl. Austr.* 1: 449. 1863; F. M. Bail. *Queensl. Fl.* 1: 282. 1899.

BRITISH NEW GUINEA: Western Division, Wassi Kussa River, Tarara, *Brass* 8647, January 1937, rambling amongst grass in savannah-forest (branches, petioles and lower surface of leaves glaucous; inflorescence red); Daru Island, *Brass* 6448, April 1936, rare small climber in edge of light rain-forest (large bunches of grape-like fruit); Laloki River, Haga, *Brass* 900, January 1926, coast savannahs (flowers reddish; fruit black, edible, slightly acrid).

With no available material for comparison, and with the similarity between the Papuan specimens and the description of this Queensland species so marked, we have hesitated to place these collections elsewhere at present. *Ampelocissus pauciflora* Merr. of the Philippine Islands is a closely related species.

**Tetrastigma** Planchon

**Tetrastigma Pullei** Lauterb. *Bot. Jahrb.* 59: 514. 1925.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass* 10247A, October 1938, alt. 2800 m., common climber of second growths in forest openings.

\*(Botanical Results of the Richard Archbold Expeditions) See *Jour. Arnold Arb.* 22: 254-270. 1941.